

Intermodal competition on the long distance passenger market: substitutability or complementarity? Evidence from France

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Abstract:

This paper explores the new conditions of substitutability or complementarity between modes on the long distance passenger market.

The fact is a generalized movement of liberalization and diversification of services on the long distance passenger market in Europe. From the train and air services in the 90's, the development of new technologies and the regulation easing incited to new services as coach or carpooling services. Consequently, it became common for the users to have the choice in several European countries between at least four mode of transport for interurban trips (air, train, carpooling and coach).

The academic literature is usually based on the analysis of two modes: impact of high speed train on air (Antes et al. 2004; Adler et al., 2010; Dobruszkes, 2011; Behrens & Pels, 2012; Jimenez & Betancor, 2012; Yang & Zhang, 2012; Gundelfinger-Casar & Coto-Millan, 2017) or coach services on train (Bataille & Steinmetz, 2013; Bergantino et al., 2015; Aarhaug & Fearnley, 2016; Raffaelea et al., 2017). Face to the development of new alternatives several papers started to extend the scope (Blayac & Bougette, 2017; Cherbonnier et al., 2018, Fageda & Sansano, 2018). Fageda & Sansano (2018) proposes to identify the factors influencing prices and frequencies in the interurban bus market. They take into account for intermodal competition train and air. Nevertheless, their data are limited (270 observations) and they do not consider the carpooling services. It can be surprising, considering that it is a potential strong competitor for coach services. Another study from Blayac & Bougette (2017) assess the impact of the coach liberalization on price, frequency and quality. The intermodal competition is considered by train and carpooling for price, frequency and travel time. However, the study do not take into account the air competition (and low-cost) as well as the capacity in terms of seat of the different modes.

This paper proposes to go further in the analysis of the new conditions of intermodal competition by innovating on several aspects:

- An extension of the market scope to the different alternatives as train, air, carpooling, coach and private car;
- An original database taking into account detailed data on each mode as price, frequency, volume (available seats), timetable, travel time;

- An original methodology taking into account the specificities of each market (intramodal competition, timetable planning, etc.) and testing their impact on the other modes in terms of price, frequency and volume.

Data:

Data has been collected on five representative routes in France from September 2019 to march 2020 every Tuesday, one month and one week before departure.

Routes selected are Brussels-Paris, Lyon-Paris, Bordeaux-Paris, Toulouse-Paris and Nice-Paris. Four modes are considered: train, air, carpooling and coach.

For each mode, the timetables, distance, speed, prices, capacities (in terms of seats) and companies (when different operators) are collected.

In total, 28 weeks are cover on five routes and four alternatives giving around 20 000 observations for prices, frequencies and capacities.

Methodology:

For the price and frequency equations describing intermodal competition, we use a SUR model (Seemingly Unrelated Regression) which belongs to the panel data estimation. This method is particularly suitable for panel data with long period (large T) and small cross-section observations (small N).

Expected results:

The expected results are several.

Firstly, it should provide a better knowledge about the interactions between modes: what happens when one train is removed or added on other modes?

Secondly, it should improve the knowledge of the effect of the intramodal competition for a specific mode on the other modes: what happens when competition increase or decrease in a specific market (coach, air) on other modes?

Finally, the analysis should assess the substitutability of the different modes and markets giving new knowledge for modelisation and regulation of interurban services.

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